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Ministry of the Environment

Ministry of Energy

Letter Of Qualification

**Development Of A Strategy For Energy And
Material Recovery To Implement The 4Rs
For Municipal Solid Waste In Ontario**

June 1984

The Proctor & Redfern Group

Price Waterhouse

Resource Integration Systems Ltd.

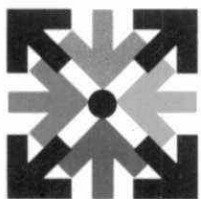
Peter Barnard & Associates

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June 18th, 1984 Project EO 96084-S27

Ministry of the Environment
Waste Management Branch
40 St. Clair Avenue West
5th Floor
TORONTO, ONTARIO
M4V LP5

Attention: Mr. R.M. Warner
Study Coordinator

Dear Sir

Letter of Qualification

Development of a Strategy
for Energy and Material Recovery
to Implement the 4Rs for
Municipal Solid Waste in Ontario.

We are pleased to submit six copies of this Letter of Qualification on behalf of a study team that includes The Proctor & Redfern Group, Price Waterhouse Associates, Resource Integration Systems Ltd., and Peter Barnard Associates.

In this letter we have outlined the qualifications and experience of each of the respective consultants and the principal study team members, and have provided a brief description of the project as we understand it.

Under separate cover we have provided a qualifications and experience package which includes an overview of each company and curricula vitae of study team members.

Proctor & Redfern would act as Project Managers for this study and would be responsible for the overall completion and administrative aspects of the project.

Mr. W.D. Goodings, P. Eng., Vice President of Proctor & Redfern, would serve as Principal-in-Charge, assisted throughout the study by senior professionals from each of the other consultants. It is our proposal to provide a team of study principals as a Working Group to the Interministry Steering Committee. We suggest this approach to strategy and policy development will provide a comprehensive and effective framework for strategy development and option evaluation. This working team concept provides the basis of our approach to this study.

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We look forward to discussing our participation in this project further and would be pleased to provide any additional information or clarification that would assist in the Committee's selection decision.

Yours very truly

The Proctor & Redfern Group

A handwritten signature in cursive script, appearing to read 'W.D. Goodings', written in dark ink.

W.D. Goodings, P. Eng.
Vice President

Encl.

ONTARIO MINISTRIES
OF THE ENVIRONMENT AND ENERGY

LETTER OF QUALIFICATION

Development of a Strategy for
Energy and Material Recovery
to Implement the 4Rs for
Municipal Solid Waste in Ontario.

The Proctor & Redfern Group
Consulting Engineers and Planners
45 Green Belt Drive, Don Mills, Ontario
M3C 3K3

June, 1984.

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1.0 INTRODUCTION

This Letter of Qualification is presented in response to a '**Request For Qualifications And Expression Of Interest**' (i.e. the 'Request') from the Ministries of the Environment and Energy. The proposed study team includes key personnel drawn from The Proctor & Redfern Group, Price Waterhouse Associates, Resource Integration Systems Ltd., and Peter Barnard Associates.

This submission describes the qualifications and experience of team in waste management and other related expertise. In consideration of this assignment, we are proposing a multi-disciplinary Study Team of professional engineers, policy planners, and management consultants which has a unique overview of the Ontario situation and applicable 'hands-on' experience to the particular matter. The highlights of our Letter of Qualification include:

- a description of the Study Team's understanding of the assignment. In preparation of the Study Approach described in Section 2.0 we have reviewed available information sources as identified in the 'Request'; discussed the proposal with Ministry of the Environment representatives; have reviewed other background reports such as the Blueprint for Waste Management in Ontario, and relied on our experience in other similar projects,
- personal profiles on the experience and qualifications of each of the consulting firms and the principal members of the study team. Mr. W.D. Goodings, P. Eng., Vice President of Proctor & Redfern Limited would be Principal-in-Charge for this study,
- documenting some of the more relevant experience of the consulting team. This experience includes undertaking a number of waste reduction opportunity studies and involvement in the Ministry of Energy study of energy from municipal solid waste,
- a description of the consulting approach suggested for this assignment. We propose to offer senior professionals from each of the consulting firms as a Working Group to the Interministry Steering Committee,
- a preliminary estimate of a study schedule and budget. The Study Team is confident that this project can be completed within 9 months of award of contract,
- a description of The Study Team's experience in similar projects. This includes work undertaken for the Ministries of Environment and Energy, Environment Canada, Ontario Waste Management Corporation, regional/municipal governments, and private interests.

2.0 STUDY APPROACH

The Study Team has reviewed the Objectives and Study Outline described in the 'Request'. On the basis of this review and our experience in similar assignments, we propose a six-phase approach that considers:

- **Phase One:** Data Collection and Evaluation - Assessment of Current Situation (Study Outline activities Nos. 1, 2, 3, 4, 5, 6, and 9)
- **Phase Two:** Options Development and Evaluation (Study Outline activities Nos. 7 and 8)
- **Phase Three:** Strategy Development (Study Outline activities Nos. 11 and 12)
- **Phase Four:** Integration Methodology (Study Outline activity No. 10)
- **Phase Five:** Decision Makers Guide (Study Outline activity No. 13)
- **Phase Six:** Report Preparation (Study Outline activities Nos. 14 and 15).

It is suggested that throughout this study, regular working meetings be held between the Study Team and the Interministry Steering Committee. Further discussion on this suggestion is provided in Section 3.0 of this Letter.

It should be noted that this phased approach can be undertaken in parallel. In consideration of the proposed study schedule, a critical path approach was considered and we concluded that only a major delay in several work activities could pre-empt the study scheduling.

Phase One would include the assembly of data current to this assignment and a literature review of Provincial, Federal, Regional/Municipal and United States Environmental Protection Agency reports and programs. Work activities in **Phase One** will also be directed towards providing an overview of the current situation in terms of:

- the scope and extent of the current data base. A resulting product of **Phase One** may be the identification of areas where further information is required,
- identifying and evaluating the feasibility, suitability and applicability of 4R and EFW/resource recovery programs in Ontario and other jurisdictions,
- documenting quantities, characteristics and the composition of municipal solid waste in Ontario on an overview basis to document past trends and predict future scenarios,
- establishing a municipal interview program. This could be approached by an advance letter or telephone survey followed by a roundtable discussion with selected participants. A personal interview program is also effective and would be discussed,

- developing an economic and cost evaluation model in consideration of available approaches,
- describing, on a generic basis, available and emerging technologies including emission technologies in Ontario and elsewhere. A common format of approach and comparison would be developed to assist in this activity,
- providing a preliminary overview of the applicability of various programs, initiatives, technologies etc. to Ontario. Consideration would be given to the Ontario profile with respect to waste generation, existing waste management systems, roles and responsibilities, past trends and need.

An important activity in **Phase One** would be the preparation of common reporting formats for information assembly and subsequent evaluation. These formats are essentially a method of facilitating the collection and reporting of data and are useful in comparing data and identifying those study areas where additional information is required. The common format approach would also permit efficient updating of the information base in the future.

Phase Two undertakes to develop a number of information and evaluative considerations in support of the development of strategy options. This would include identifying the barriers and opportunities to implementing programs in Ontario, developing a set of option and program evaluative criteria and developing a model to examine costs and economics of various options. A review of approaches and methodologies tried elsewhere including Ontario, will assist in completing this activity.

Phase Three is the strategy development phase and is considered a key element to this assignment. It is proposed that this phase be undertaken in regular consultation with the Interministry Steering Committee on the basis of the findings from **Phases One and Two**. The use of common formats and application of the evaluation criteria will be extremely useful in the development of strategies. **Phase Three** will also identify the factors that should be considered in estimating the 'true cost' of waste management methods such as landfill. This exercise will also examine the use of initiatives or incentives such as disposal credits used in the State of New Jersey or landfill surcharges.

The development of an integration framework and methodology in **Phase Five** will suggest ways and means of meeting Energy and Environment's goals. Often when considering the feasibility of an EFW facility, compared to a multi-material collection program, objectives are at odds. These type of considerations will be necessary in developing a framework that reflects Ministry objectives and waste management practices at the municipal/regional level.

Phase Five is the preparation of a 'Decision Makers Guide'. This guide would provide the necessary information to prospective proponents to assist in the initiation, development and procurement of an EFW or materials recovery project. This guide would address pertinent aspects of the process based on applicable experience in Ontario and other jurisdictions. Past failures and successes in the field would be examined to identify the criteria for success. An important consideration of this guide is the juxtaposition of the Environmental Assessment

and Environment Protection Acts, particularly with respect to the Blueprint.

In consultation with the Interministry Steering Committee, study reports would be prepared and presentations developed. It is expected that this would include at least one interim or progress report and a number of technically oriented documents and presentations. The preparation of reports are identified as a **Phase Six** set of activities, but would likely be undertaken as required and directed throughout the project.

3.0 THE STUDY TEAM

The approach to this assignment that we propose is to assemble senior professionals as study principals from each of the respective consulting firms to participate directly with the Interministry Steering committee. These study principals (i.e. the Working Group) will be seconded to this study and be responsible for overall completion. It is proposed that W.D. Goodings, of Proctor & Redfern be Principal-in-Charge of the following Working Group members:

- Mr. Ron Pirie, Senior Manager, Price Waterhouse Associates,
- Mr. Jack McGinnis, Director of Research and Development, Resource Integration Systems Ltd.,
- Mr Peter Barnard, President, Peter Barnard Associates.

This Working Group and the respective consulting firms represented, can provide the range of expertise and scope of services and personnel necessary to complete this study. Further, it is suggested the Working Group concept is the necessary mechanism to undertake and complete the study program within the desired study schedule and budget constraints.

In essence, the Study Team can offer to this assignment:

- expertise in all aspects of waste management including waste quantity estimation and characterization, incineration, energy-from-waste, and resource recovery technologies, evaluation of recycling opportunities, implementation of recycling programs, regulation and policy development, economic planning and research, management skills,
- participation in many waste management studies undertaken in Ontario,
- a network of branch offices and professional contacts throughout Ontario,
- a corporate commitment to undertake and complete the study within an allotted time frame and budget.

Proctor & Redfern will assume responsibility for all administrative and technical aspects of the Study. We are experienced in the role of project management for large multi-disciplinary studies and can effectively and efficiently manage this study to a successful completion.

3.1 Proctor & Redfern

Proctor & Redfern is one of Canada's most experienced and respected consulting firms. Founded in 1912, the company operates across Canada and abroad, offering consulting services to both public and private sector clients in engineering, planning, environmental sciences and economics.

Proctor & Redfern has also undertaken a variety of waste management assignments, including waste management systems planning, waste quantity inventories, energy-from-waste studies and landfill design and operations. To each of our waste management assignments we propose a multi-disciplinary team of experienced engineers, planners, economists and environmental scientists. Our approach has resulted in notable successes in taking projects from the planning stage to implementation.

Of particular relevance to this assignment is our work undertaken for the Ontario Waste Management Corporation (OWMC) and Environment Canada and our understanding and application of the Environment Assessment process to several current assignments.

For these projects we completed a major inventory study of hazardous waste generation in Ontario, prepared a hazardous waste reduction opportunities study and also studied hazardous waste recycling opportunities by major industrial classification across Canada. Each of these studies has particular significance to this present assignment and are further described in Section 5.0 of this Letter.

The Proctor & Redfern study team are described briefly below. The full resources of Proctor & Redfern and our branch offices are available to this project.

William Goodings, P. Eng. and Vice President of Proctor & Redfern will serve as Principal-in-Charge for this study. His responsibilities in this study will include: overall project direction, liaison with the Interministry Steering Committee, and attendance at each project meeting.

Mr. Goodings is head of Proctor & Redfern's Waste Management group and lends his 25-plus years of experience to our assignments. He has been responsible as project manager or project advisor to all our waste management assignments including our work with Ontario Waste Management Corporation (OWMC) and Environment Canada.

David Schram, M.C.I.P., is a Senior Planner with Proctor & Redfern and has participated in all our firm's waste management assignments since joining the firm in 1976. His particular expertise is in the areas of waste quantity estimation, waste recycling opportunity studies, project management, land use planning, policy development, site selection, environmental assessment, approvals and system studies. Mr. Schram was project manager for all the firm's waste recycling studies undertaken to date.

Bruce Lockhart, P. Eng. is Proctor & Redfern's engineer responsible for the technical design and evaluation of our EFW and incineration assignments. Bruce was formerly employed by TRICIL and participated in several EFW and incineration

assignments including: SWARU (Hamilton), Akron, Ohio and Charlottetown, P.E.I., EFW plants.

Mr. Jim Dempster, P. Eng. will be seconded to Proctor & Redfern on an as-required basis. Jim is also a former TRICIL employee and brings to this assignment over 30 years experience in energy recovery and incineration design and operations.

3.2 Price Waterhouse

Price Waterhouse Associates is a Canadian firm of management consultants and an integral part of Price Waterhouse, a top chartered accountancy firm which offers audit and tax services to a broad range of clients.

Price Waterhouse Associates provide a wide range of management consulting service and provide expertise in the design and operation of computer modelling. The firm specializes in computer modelling of economic feasibility and financial analyses. They regularly apply this expertise to private and public sector applications and at all levels of review. Often incorporated in this application, is the cost-benefit element used in considering the feasibility of alternatives.

Price Waterhouse Associates' experience in a similar project with the Ministry of Energy is significant and relevant to this current assignment. As prime consultant, Price Waterhouse Associates was responsible for the computer modelling used in the report 'Development Strategy for an Energy from Municipal Solid Waste Industry'.

In this proposed study, Price Waterhouse will be responsible for computer modelling and financial analysis.

Ronald C. Pirie, M.B.A., P.Eng., RIA, CMC, is a Senior Manager for Price Waterhouse Associates' Toronto office. Ron is a professional engineer and has a broad background in financial management and analysis. He has conducted many studies that involved the assessment of financial impacts of management and other strategy related decisions. For this study, Ron would lend this experience to the Working Group and would be project manager for Price Waterhouse Associates.

Donald W. Belfall, B.Comm., M.B.A., is a Senior Consultant with Price Waterhouse Associates. He has participated in numerous consulting assignments, particularly computer modelling exercises as both a consultant and in private industry. As Budget and Planning Manager with Levis Strauss Canada, he was involved extensively with computer applications as a management and budget tool.

Donald would be responsible for the computer modelling activities for this study with contribution from the Toronto office staff.

3.3 Resource Integration Systems Limited (RIS)

RIS specializes in the evaluation and implementation of waste reduction and recycling opportunities and programs. RIS has participated in several related studies including:

- evaluation of handling stations for waste reclamation systems in Ontario,
- evaluation of waste reduction opportunities for six major industrial sectors for Environment Canada,
- design of a multi material recovery system for Alcan and the Recycling Support Council, (a consortium of glass, plastic and paper industries),
- recycling and marketing study for the Ontario Waste Management Corporation,
- waste recycling opportunities study and strategy development exercise for hazardous, rubber and oil waste - Environment Canada,
- research, design and implementation of waste recycling programs at the municipal and regional level - Kitchener, Halton, Ottawa, Vancouver, etc.

Mr. Jack McGinnis, Manager of Research and Development for RIS, will be a study principal on the Working Group. Jack has a significant amount of experience in both strategy development and program implementation.

A particular asset to the study is the previous working relationship of RIS and Proctor & Redfern. The two firms have worked together on a number of major assignments and have developed a common approach to their assignments.

3.4 Peter Barnard Associates

Since its inception in 1967, Peter Barnard Associates has provided a wide range of planning-related and management consulting services to municipalities, regions, and numerous provincial and federal agencies.

The firm brings together in-house experienced professionals in planning, economics, the social sciences, engineering and business management.

Of particular relevance to this project is the firm's experience in strategic planning and program development. Recent projects relevant to this assignment include:

- development of a strategy plan for the Ontario Waste Management Corporation,
- analysis of waste recycling opportunities through household separation and a demonstration program to test markets and execute a source separation study for the Ministry of the Environment,
- several projects requiring the preparation and administration of interviews.

Peter Barnard Associates' involvement in this study will be in the areas of strategy and option development, option evaluation, undertaking municipal interviews and data collection.

Peter Barnard is President of Peter Barnard Associates and would bring to this study a wide range of evaluative and analytical skills. Mr. Barnard has considerable experience in the development of policy and strategy and would be an important part of the Working Group.

Mr. Barnard has participated in a number of similar assignments both in Canada and abroad, involved in coordinating the firm's technical and management consulting services.

Susan Wright is an Associate with Peter Barnard Associates and has worked in a wide range of fields as a consultant including government policy and program analyses, socio-economic assessment and municipal and hazardous waste management studies.

Ms. Wright would be involved in all aspects of the proposed study and would assist Mr. Barnard in the Working Group.

4.0 PRELIMINARY ALLOCATIONS

Table 1 provides a preliminary estimate of man-days required to complete the assignment as described in Section 2.0. This table does not identify working meetings and assumes that the Consultant Study Team would be responsible for all work outlined in the 'Request'.

Another unknown is the preparation of reports. Until this activity has been further described in terms of number of reports requiring preparation and scope and content of each, we cannot allocate man-days and budget.

The budget and manpower allocation identified in this section should be viewed as extremely preliminary and could only be refined following further discussions with the Interministry Steering Committee and subsequent definition of the study approach.

4.1 Man-Days

It is estimated that a total of 135 man-days will be required to undertake and complete the project to the end of the Fifth Phase. This estimate is further described in terms of Study Phase in Table 1.

4.2 Cost

The preparation of a budget for this assignment can be seriously misleading in terms of overall project costs. On the basis of available information to the study team, we are unable to budget the cost of:

- attendance at meetings,
- report preparation and presentation
- presentation of materials and information
- computer runs of economic and cost analysis

- organizing and undertaking municipal interviews
- client/consultant share of the workload.

However, on the basis of the preliminary estimate of man-days and the per diem rates as follows, the Study Team suggests a budget of \$75,000 be allocated to complete the first five phases of work. This provides that only an interim report will be prepared following Phase Four.

Study Principal	Per Diem Rates for Study Principals \$/Day
W.D. Goodings	\$650.00
D. Schram	\$450.00
R. Pirie	\$840.00
D. Belfall	\$595.00
J. McGinnis	\$440.00
P. Barnard	\$975.00
S. Wright	\$525.00

TABLE 1
PRELIMINARY MAN-DAY ESTIMATE -
STUDY TEAM

STUDY PHASE	MAN-DAYS
PHASE ONE Data Collection and Evaluation	20
PHASE TWO Options Development and Evaluation	30
PHASE THREE Strategy Development	30
PHASE FOUR Integration Methodology	30
PHASE FIVE Decision Makers Guide	25
PHASE SIX Report Preparation	N/A
ESTIMATED TOTAL	135

5.0 DESCRIPTION OF STUDY TEAM EXPERIENCE

The following provides a brief description of some of the more relevant experience of the Study Team.

ONTARIO MINISTRY OF THE ENVIRONMENT

- analysis of waste recycling opportunities through household separation,
- evaluation of handling stations for waste reclamation systems,
- assistance in the preparation of solid waste management cost accounting system

ONTARIO MINISTRY OF ENERGY

- analyses of energy recovery potential of MSW in Ontario and development of an energy potential strategy,
- EFW feasibility studies for the Regional Municipality of Sudbury/INCO and for City of St. Catharines/GM.

ENVIRONMENT CANADA

- waste reduction and opportunities study for hazardous rubber and oil wastes. This work included identifying the barriers to recycling and preparing a strategy development in support of the Federal National Recycling Strategy
- waste reduction and audit study of six industries sectors. The product of this study is the design and implementation of a community based demonstration program for waste recycle/reuse/reduction.

ONTARIO WASTE MANAGEMENT CORPORATION

- waste Reduction and Opportunities Study for hazardous waste in Ontario,
- recycling and marketing study,
- development of strategy plan.

PRIVATE SECTOR

- design and implementation of curbside multi-material collection program,
- feasibility analysis of resource recovery and multi-material separation proposal,
- design of multi-material recovery system in Ontario,
- financial feasibility and economic impact studies.

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